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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,317	10/20/2003	Hyun T. Kim	2003-0551.00/US	4522

7590  
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04/18/2005

EXAMINER

GUERRERO, MARIA F

ART UNIT PAPER NUMBER

2822

DATE MAILED: 04/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/690,317

Applicant(s)

KIM ET AL.

Examiner

Maria Guerrero

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 19-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. This Office Action is in response to the Election filed March 28, 2005.

**Status of Claims**

2. Claims 1-18 are canceled. Claims 19-21 are pending.

***Election/Restrictions***

3. Applicant's election without traverse of Group II, claims 19-21 in the reply filed on March 28, 2005 is acknowledged.

***Information Disclosure Statement***

4. The information disclosure statement (IDS) submitted on October 21, 2003 has been considered.

***Specification***

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 19 is rejected under 35 U.S.C. 102(b) as being anticipated by Park et al. (US 5,296,400).

Park et al. shows a method of fabricating a transistor source/drain connection between adjacent transistor gate structures (Abstract). Park et al. discloses depositing a filler material at least in a region between the adjacent transistor gate structures (Fig. 2B). Park et al. teaches removing the filler material with a process having removal selectivity to nitride greater than 40:1 to form a contact opening and depositing a conductive material in the contact opening.

7. Claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by Wei et al. (US 6,423,645).

Wei et al. shows a method of fabricating a transistor source/drain connection between adjacent transistor gate structures (col. 3, lines 50-60). Wei et al. discloses depositing an amorphous carbon filler material at least in a region between the adjacent transistor gate structures (col. 3, lines 8-17, col. 4, lines 27-35). Wei et al. teaches selectively dry developing the carbon filler material to form a contact opening and depositing a polysilicon material in the contact opening (Abstract, Fig. 7, col. 1, lines 5-20, col. 3, lines 60-67, col. 4, lines 27-35).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (US 5,296,400) in view of Ha (U.S. 6,451,708).

Park et al. shows a method of fabricating a transistor source/drain connection between adjacent transistor gate structures (Abstract). Park et al. discloses depositing a filler material at least in a region between the adjacent transistor gate structures (Fig. 2B). Park et al. teaches removing the filler material with a process having removal selectivity to nitride greater than 40:1 to form a contact opening and depositing a conductive material in the contact opening (Fig. 2D-2F, col. 4, lines 10-25, col. 52-65).

Park et al. does not specifically show the aspect ratio being greater than about 5:1. However, Ha shows forming a contact opening having the aspect ratio greater than about 5:1 (col. 6, lines 40-65).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Park et al. reference by specifying the aspect ratio being greater than about 5:1 as taught by Ha in order to obtain a high aspect ratio contact holes concurrently in the cell array a region and the peripheral circuit region without increasing the process steps and the cost (Ha, col. 2, lines 45-67).

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. McAnally et al. (EP 0849785 A2), Howard (US 5,897,372), Havemann (US 5,482,894), and Linliu (US 6,287,957) teach several steps related to applicant's disclosure.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Guerrero whose telephone number is 571-272-1837.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

April 11, 2005

*Maria Guerrero*  
**MARIA F. GUERRERO**  
**PRIMARY EXAMINER**